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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/785,466	02/23/2004	Kyle K. Kirby	108298749US	8567
25096	7590	09/15/2005	EXAMINER	
PERKINS COIE LLP			LIVEDALEN, BRIAN J	
PATENT-SEA				
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SEATTLE, WA 98111-1247			2878	

DATE MAILED: 09/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/785,466

Applicant(s)

KIRBY, KYLE K.

Examiner

Brian J. Livedalen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-60 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-60 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In regard to claim 20, claim is indefinite because it is contradictory in regard to claim 15. Optic member cannot be integral to both the window and side member if window and side member are separate parts.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 15 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Glenn et al. (US 6734419).

In regard to claims 15 and 20, Glenn discloses (fig. 2b) a microelectronic imaging unit containing a microelectronic die (111) including an image sensor (113), an integrated circuit (fig. 2a) electrically coupled to the image sensor, and a plurality of

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terminals electrically coupled to the integrated circuit; a cover unit (101) over the image sensor, the cover unit having a window (fig. 6, 655) attached to a side member (103); and the side member being attached to the die; and electrically conductive interconnects (103a) coupled to corresponding terminals and extending through the cover unit and/or die. Glenn further discloses an optic member (107) integral with the window and the side member and positioned at a desired location relative to the image sensor.

Claims 1, 2, 4, 9, 10, 11, 13, 14, 26, 27, 29, 34-36, 38-41, 43, 46, 47, 49, 53, 55, and 57-59 are rejected under 35 U.S.C. 102(b) as being anticipated by Glenn (6143588) further referred to as Glenn'588.

In regard to claims 1, 2, 4, 9, 10, 11, 13, 14, 26, 27, 29, 34-36, 38-41, 43, 46, 47, 49, 53, 55, and 57-59, Glenn'588 discloses (fig. 1) a microelectronic imaging unit and method containing a microelectronic die (14) including an image sensor (24), an integrated circuit (abstract) electrically coupled to the image sensor, and a plurality of terminals electrically coupled to the integrated circuit; a single cover unit (29, 20) over the image sensor, the cover unit having a window (29) attached to a side member (20); and the side member being attached to the die; and electrically conductive interconnects (18) coupled to corresponding terminals and extending through the cover unit and/or die; a plurality of bond-pads (19) on the first side of the die and electrically coupled to the integrated circuit; the interconnects electrically coupled to corresponding bond-pads. The side member is attached to and seals the first side of the die as well as

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the side (perimeter) of the die. Glenn'588 further discloses interconnects having a first end portion coupled to corresponding terminals and a second end portion apart from the first; and a plurality of ball-pads (33) on the second side of the die coupled to corresponding end portions of the interconnects which extend through the cover unit. Glenn'588 further discloses the cover unit includes at least one of glass, quartz, or other material transmissive to a desired spectrum of radiation (abstract). Glenn'588 further discloses the above microelectronic imaging unit as an array of imaging units (column 2, lines 22-26)

Claims 15 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Moess et al. (6825458).

In regard to claims 15 and 23, Glenn discloses (fig. 2) a microelectronic imaging unit containing a microelectronic die (22) including an image sensor (16), an integrated circuit (20) electrically coupled to the image sensor, and a plurality of terminals electrically coupled to the integrated circuit; a cover unit (10) over the image sensor, the cover unit having a window (60) attached to a side member (24); and the side member being attached to the die; and electrically conductive interconnects (59) coupled to corresponding terminals and extending through the die.

Claims 15 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Hoffman (US 6759266).

In regard to claims 15 and 18, Hoffman discloses (fig. 1) a microelectronic imaging unit and method containing a microelectronic die (108) including an image sensor (112), an integrated circuit (column 7, lines 8-13) electrically coupled to the image sensor, and a plurality of terminals electrically coupled to the integrated circuit; a cover unit (106, 130) over the image sensor, the cover unit having a window (130) attached to a side member (106); and the side member being attached to the die; and electrically conductive interconnects (116) coupled to corresponding terminals and extending through the cover unit and/or die. Hoffman further discloses the cover unit enclosing a portion of the first side and perimeter of the die and an encapsulant (110) disposed on the second side of the die.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 7, 8, 19, 26, 28, 32, 33, 48, 52, 54, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glenn et al. (US 6734419).

In regard to claims 1, 3, 7, 8, 26, 28, 32, 33, 48, and 54, Glenn discloses (fig. 2b) a microelectronic imaging unit and method containing a microelectronic die (111) including an image sensor (113), an integrated circuit (fig. 2a) electrically coupled to the

image sensor, and a plurality of terminals electrically coupled to the integrated circuit; a cover unit (101) over the image sensor, the cover unit having a window (fig. 6, 655) attached to a side member (103); and the side member being attached to the die; and electrically conductive interconnects (103a) coupled to corresponding terminals and extending through the cover unit and/or die; a plurality of bond-pads (109a) on the first side of the die and electrically coupled to the integrated circuit; the interconnects electrically coupled to corresponding bond-pads (column 2, lines 46-61). Glenn fails to disclose the window and the side member being integral. However it is of routine skill in the art to make separate parts integral. It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the window and side member integral in order to more effectively seal the imaging unit. Glenn further discloses the side member including a sealing face attached to the first side of the die without any portion of the side member contacting any other portion of the die. Glenn further discloses an optic member (107) integral with the window and the side member and positioned at a desired location relative to the image sensor. Glenn further fails to disclose an optic member attached to the cover unit. However, it is also of routine skill in the art to separate integral parts. It would have been obvious to one of ordinary skill in the art at the time the invention was made to separate the optic member from the cover unit in order to provide adaptability.

In regard to claim 19, 52, and 56 Glenn discloses (fig. 2b) an imaging unit as set forth above applied to claims 15 and 46. Glenn fails to disclose an optic member attached to the cover unit. However, it is also of routine skill in the art to separate

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integral parts. It would have been obvious to one of ordinary skill in the art at the time the invention was made to separate the optic member from the cover unit in order to provide adaptability.

Claims 1, 5, 26, 30, 46, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoffman (6759266).

In regard to claims 1, 5, 26, 30, 46, and 50, Hoffman discloses (fig. 1) a microelectronic imaging unit and method containing a microelectronic die (108) including an image sensor (112), an integrated circuit (column 7, lines 8-13) electrically coupled to the image sensor, and a plurality of terminals electrically coupled to the integrated circuit; a cover unit (106, 130) over the image sensor, the cover unit having a window (130) attached to a side member (106); and the side member being attached to the die; and electrically conductive interconnects (116) coupled to corresponding terminals and extending through the cover unit and/or die; a plurality of bond-pads (114) on the first side of the die and electrically coupled to the integrated circuit; the interconnects electrically coupled to corresponding bond-pads. Hoffman fails to disclose the window and the side member being integral. However it is of routine skill in the art to make separate parts integral. It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the window and side member integral in order to more effectively seal the imaging unit. Hoffman further discloses the cover unit enclosing a portion of the first side and perimeter of the die and an encapsulant (110) disposed on the second side of the die.



Claims 15-17, 21, 22, 24, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glenn (6143588) further referred to as Glenn'588.

In regard to claims 15-17, 21, 22, 24, and 25, Glenn'588 discloses (fig. 1) a microelectronic imaging unit containing a microelectronic die (14) including an image sensor (24), an integrated circuit (abstract) electrically coupled to the image sensor, and a plurality of terminals electrically coupled to the integrated circuit; a cover unit (29, 20) over the image sensor, the cover unit having a window (29) attached to a side member (20); and the side member being attached to the die; and electrically conductive interconnects (18) coupled to corresponding terminals and extending through the cover unit and/or die. Glenn'588 fails to disclose an optic member attached to the cover unit. However, it is also of routine skill in the art to separate integral parts. It would have been obvious to one of ordinary skill in the art at the time the invention was made to separate the optic member from the cover unit in order to provide adaptability. The side member is attached to and seals the first side of the die as well as the side (perimeter) of the die. Glenn'588 further discloses interconnects having a first end portion coupled to corresponding terminals and a second end portion apart from the first; and a plurality of ball-pads (33) on the second side of the die coupled to corresponding end portions of the interconnects which extend through the cover unit. Glenn'588 further discloses the window and side member include at least one of glass, quartz, or other material transmissive to a desired spectrum of radiation (page 1, paragraph 0008).

Claims 1 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moess et al. (6825458).

In regard to claims 1 and 12, Moess discloses (fig. 2) a microelectronic imaging unit containing a microelectronic die (22) including an image sensor (16), an integrated circuit (20) electrically coupled to the image sensor, and a plurality of terminals electrically coupled to the integrated circuit; a cover unit (10) over the image sensor, the cover unit having a window (60) attached to a side member (24). Moess fails to disclose the window and the side member being integral. However it is of routine skill in the art to make separate parts integral. It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the window and side member integral in order to more effectively seal the imaging unit. Moess further discloses the side member being attached to the die; and electrically conductive interconnects (59) coupled to corresponding terminals and extending through the die.

Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Glenn (6143588) further referred to as Glenn'588 in view of Moess et al. (6825458).

In regard to claim 37, Glenn'588 discloses (fig. 1) an imaging unit as set forth above. Glenn'588 fails to disclose interconnects extending through the die. However, Moess discloses (fig. 2) an imaging unit with interconnects (59) extending through the die. It would have been obvious to one of ordinary skill in the art at the time the invention was made to extend the interconnects of Glenn'588 through the die in order to increase insulation.

Claims 40, 42, 44, 45, and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glenn et al. (US 6734419) in view of Glenn (6143588) further referred to as Glenn'588.

In regard to claims 40, 42, 44, 45, and 60, Glenn discloses (fig. 2b) a microelectronic imaging unit and method containing a microelectronic die (111) including an image sensor (113), an integrated circuit (fig. 2a) electrically coupled to the image sensor, and a plurality of terminals electrically coupled to the integrated circuit; a cover unit (101) over the image sensor, the cover unit having a window (fig. 6, 655) attached to a side member (103); and the side member being attached to the die; and electrically conductive interconnects (103a) coupled to corresponding terminals and extending through the cover unit and/or die; a plurality of bond-pads (109a) on the first side of the die and electrically coupled to the integrated circuit; the interconnects electrically coupled to corresponding bond-pads (column 2, lines 46-61). Glenn fails to disclose the window and the side member being integral. However it is of routine skill in the art to make separate parts integral. It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the window and side member integral in order to more effectively seal the imaging unit. Glenn is also silent about having a plurality of plurality of microelectronic imagers. However Glenn'588 discloses having a plurality of microprocessors (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a plurality of microelectronic imagers to either obtain images of a greater span or to obtain images

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with greater accuracy. Glenn further discloses an optic member (107) integral with the window and the side member and positioned at a desired location relative to the image sensor. Glenn fails to disclose an optic member attached to the cover unit. However, it is also of routine skill in the art to separate integral parts. It would have been obvious to one of ordinary skill in the art at the time the invention was made to separate the optic member from the cover unit in order to provide adaptability.

Claims 6, 31, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glenn et al. (US 6734419) in view of Kang et al. (US 6541762).

In regard to claims 6, 31, and 51, Glenn discloses (fig. 2b) a microelectronic imaging unit as set forth above applied to claims 1, 26, and 46. Glenn fails to disclose an encapsulant disposed on a portion of the second side and perimeter of the die as well as the cover unit. However, Kang teaches (fig. 4) encapsulating (390) the three elements in an optical sensor package. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the encapsulation of Kang to the unit of Glenn in order to seal the die more effectively and more economically.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Livedalen whose telephone number is (571) 272-2715. The examiner can normally be reached on 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

bjl



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